



Brush Cutter

RBC280

RBC320

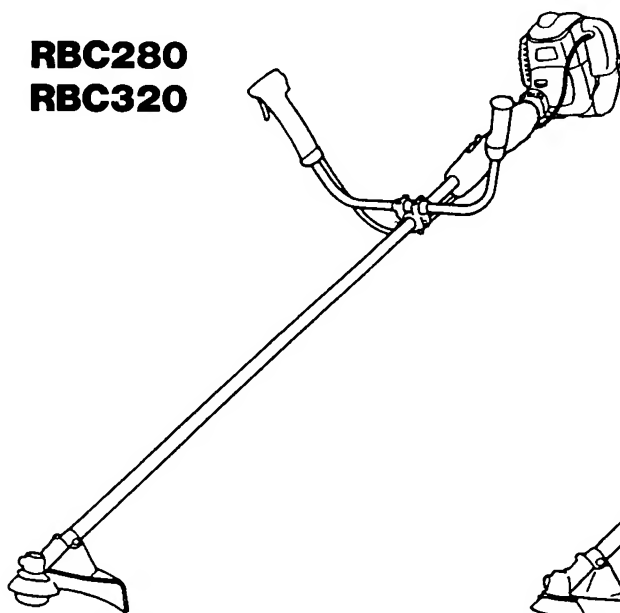
String Trimmer

RBC281

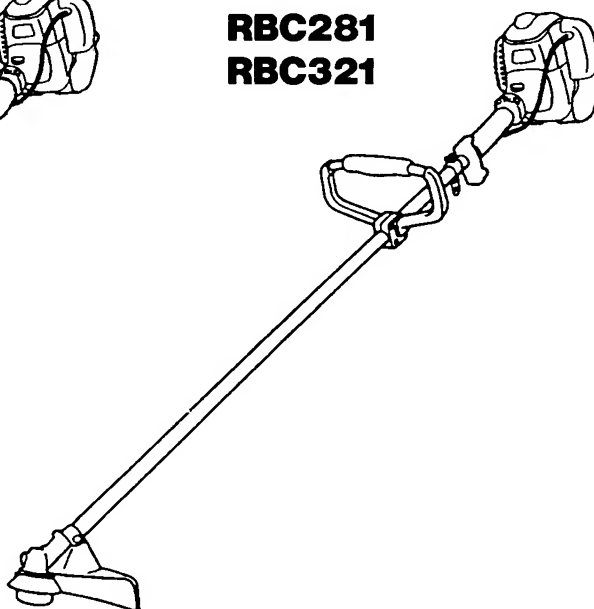
RBC321

INSTRUCTION MANUAL

RBC280
RBC320



RBC281
RBC321



WARNING:

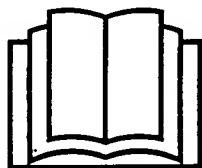
To reduce the risk of Injury, user must read and understand the Instruction manual before using the Brush Cutter or String Trimmer.

Specifications may differ from country to country.

Do only hand over the Brush Cutter or String Trimmer together with this manual.

Thank you very much for purchasing the MAKITA Brush Cutter or String Trimmer.. We are pleased to recommend to you the MAKITA Brush Cutter or String Trimmer which is the result of a long development programme and many years of knowledge and experience.

Please read this booklet that refers to in detail the various points that will demonstrate its outstanding performance. This will assist you to obtain the best possible result from your MAKITA Brush Cutter or String Trimmer.



SYMBOLS

You will note the following symbols when reading the instructions manual.

Table of Contents	Page
Symbols.....	2
Safety instructions.....	3-6
Specification	7
Designation of parts	8
Assembly of engine.....	9
Mounting of handle.....	10
Mounting of guard	11
Mounting of cutter blade or nylon cutting head.....	12
Fuels/Refuelling	13
Proper handling of machine.....	14
Brush cutter operation	14-15
Idle adjustment	16
Resharpener the cutter blade	16-17
Maintenance	18-19
Storage	20



Read, Understand and Follow Instruction Manual



Take Particular Care and Attention



Forbidden



Keep distance



Flying object hazard



No smoking



No naked flame



Protective gloves must be worn



Kickback



Keep the area of operation clear of all persons and pets



Wear eye and ear protection (for string trimmer)



Wear protective helmet, eye and ear protection (for Brush Cutter only)



Do not use metal blades (for String trimmer only)



Top permissible tool speed



Fuel and oil mixture



Engine-manual start



Emergency stop



First aid



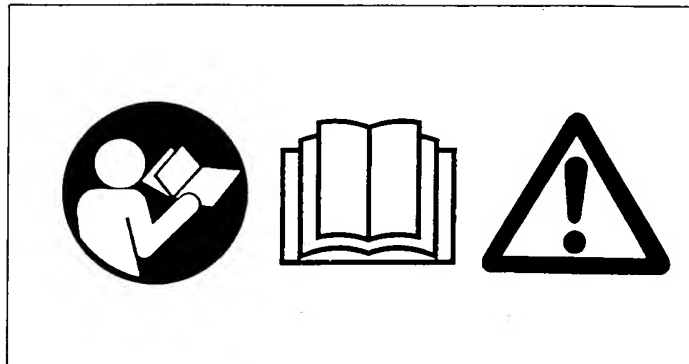
Recycling



SAFETY INSTRUCTIONS

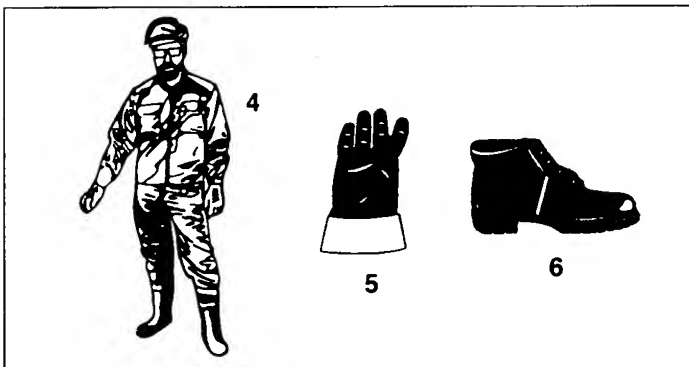
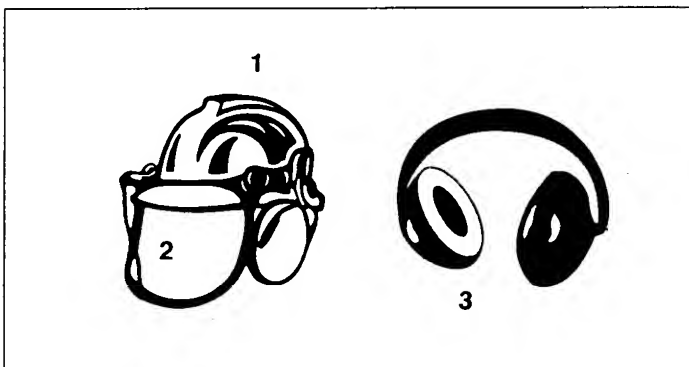
General Instructions

- To ensure correct operation, the user has to read this instruction manual to make himself familiar with the handling of the brush cutter or string trimmer. Users insufficiently informed will risk danger to themselves as well as others due to improper handling.
- It is recommended only to lend the brush cutter to people who have proven to be experienced with brush cutters or string trimmers. Always hand over the instruction manual.
- First users should ask the dealer for basic instructions to familiarize oneself with the handling of an engine powered cutter.
- Children and young persons aged under 18 years must not be allowed to operate the brush cutter or string trimmer. Persons over the age of 16 years may however use the device for the purpose of being trained only whilst under supervision of a qualified trainer.
- Use brush cutters or string trimmers always with the utmost care and attention.
- Operate the brush cutter or string trimmer only if you are in good physical condition. Perform all work calmly and carefully. The user has to accept liability for others.
- Never use the brush cutter or string trimmer after consumption of alcohol or drugs.
- Do not use the brush cutter or string trimmer when you are tired.
- Save these instructions for future referral.



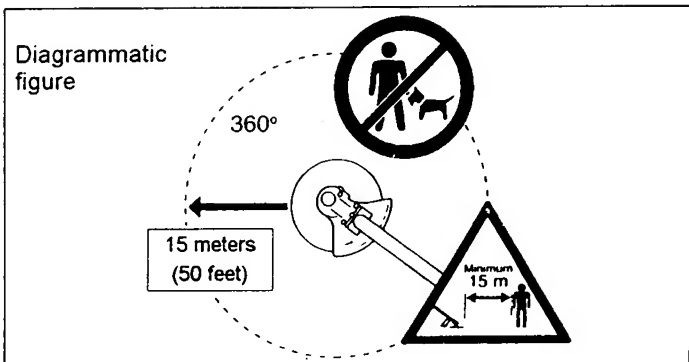
Personal protective equipment

- The clothing worn should be functional and appropriate, i.e. it should be tight-fitting but not cause hindrance. Do not wear either jewelry or clothing which could become entangled with bushes or shrubs.
- In order to avoid either head-, eye-, hand- or foot injuries as well as to protect your hearing the following protective equipment and protective clothing must be used during operation of the brush cutter or string trimmer.
- Always wear a helmet when working in the forest. The protective helmet (1) is to be checked at regular intervals for damage and is to be replaced at the latest after 5 years. Use only approved protective helmets.
- The visor (2) of the helmet (or alternatively goggles) protects the face from flying splinters and stones. During operation of the brush cutter or string trimmer always wear goggles, or a visor to prevent eye injuries.
- Wear adequate noise protection equipment to avoid hearing impairment (ear muffs (3), ear plugs etc.).
- The work overalls (4) protect against flying stones and splinters. We strongly recommend that the user wear work overalls.
- Special gloves (5) made of thick leather are part of the prescribed equipment and must always be worn during operation of the brush cutter or string trimmer.
- When using the brush cutter or string trimmer, always wear sturdy shoes (6) with a non-slip sole. This protects against injuries and ensures a good footing.

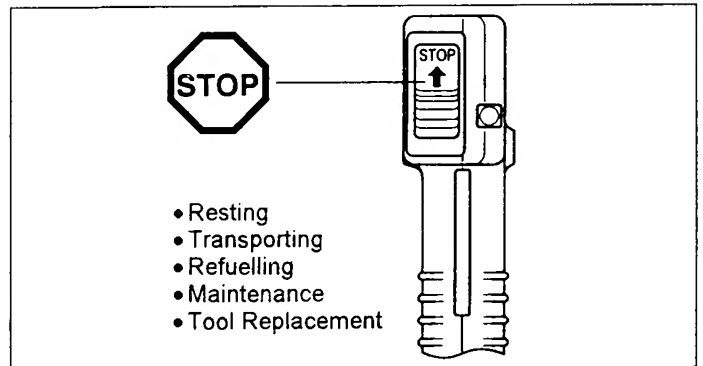
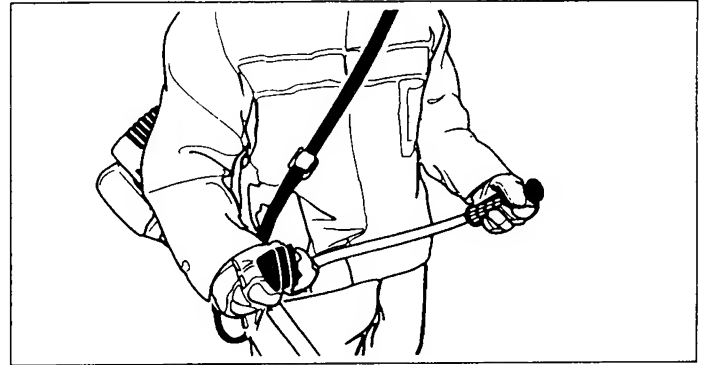
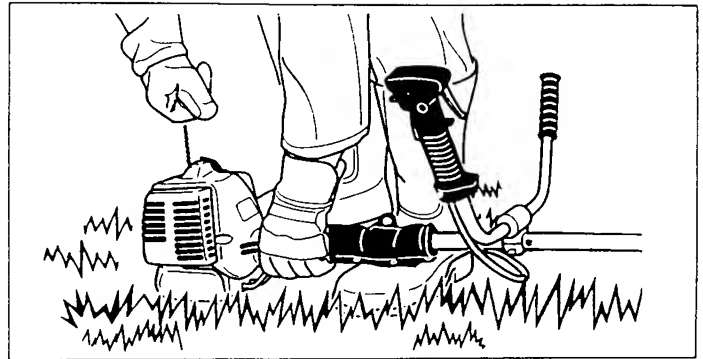


Starting up the brush cutter or string trimmer

- Please make sure that there are no children or other people within a working range of 50 feet or 15 meters, also pay attention to any animals in the working vicinity.
- Before use always check that the brush cutter or string trimmer is safe for operation:
Check the security of the cutting tool, the control lever for easy action and check for proper functioning of the control lever lock. Rotation of the cutting tool during idling speed is not allowed. Check for clean and dry handles and test the function of the STOP switch.
- Before operation, check and follow local regulations concerning sound level and hours of operations.

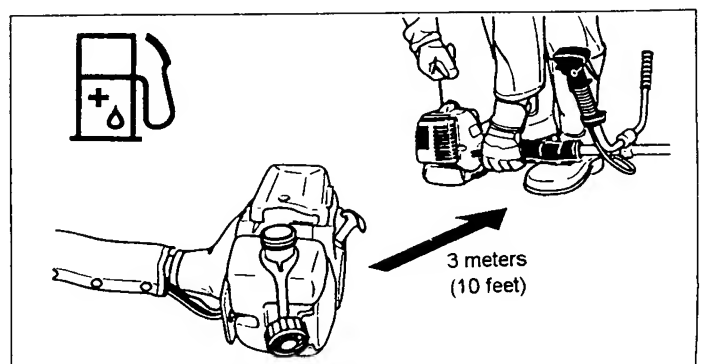
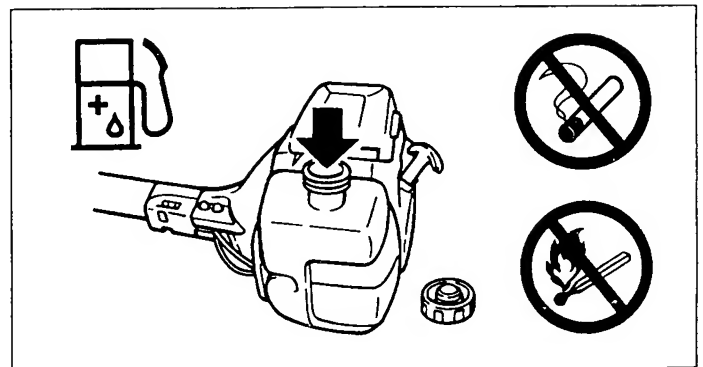


- Start the brush cutter or string trimmer only in accordance with the instruction. Do not use any other methods for starting the engine!
- Use the brush cutter or string trimmer and the tools only for such applications specified.
- Start the brush cutter or string trimmer engine only, after the entire brush cutter or string trimmer has been assembly is done. Operation of the device is only permitted after all the appropriate accessories are attached!
- Before starting make sure that the cutting tool has no contact with hard objects such as branches, stones etc.
- The engine is to be stopped immediately in case of any engine problems.
- Should the cutting tool hit stones or other hard objects, immediately STOP the engine and inspect the cutting tool.
- Inspect the cutting tool at short regular Intervals for damage (detection of hairline cracks by means of tapping - noise test).
- Operate the brush cutter or string trimmer only with the shoulder strap attached which is to be suitably adjusted before putting the brush cutter or string trimmer into operation. It is essential to adjust the holder strap according to the user's size to prevent fatigue occurring during use. Never hold the cutter with one hand during use.
- Operate the brush cutter or string trimmer in such a manner as to avoid inhalation of the exhaust gases. Never run the engine in enclosed rooms (risk of gas poisoning). Carbon monoxide is an odorless gas. Always ensure there is adequate ventilation.
- Stop the engine when resting and when leaving the brush cutter or string trimmer unattended, and place it in a safe location to prevent danger to others or damage to the machine.
- Never lay down the hot brush cutter or string trimmer onto dry grass or onto any combustible materials.
- The cutting tool has to be equipped with it's appropriate guard. Never run the cutter without this guard.
- All protective installations and guards supplied with the machine must be used during operation.
- Never operate the engine with faulty exhaust muffler.
- Stop the engine during transport.
- During transport over long distances the tool protection included with the equipment must always be used.
- Ensure safe position of the brush cutter or string trimmer during car transportation to avoid fuel leakage.
- When dispatching the brush cutter or string trimmer, ensure that the fuel tank is completely empty.



Refuelling

- To reduce the risk of fire and burn injury : handle fuel with care. It is highly flammable.
- Stop the engine during refuelling, keep away from naked flames and do not smoke.
- Avoid skin contact with mineral oil products. Do not inhale fuel vapor. Always wear protective gloves during refuelling. Change and clean protective clothing at regular intervals.
- Take care not to spill either fuel or oil in order to prevent soil contamination (environmental protection). Clean the brush cutter or grass trimmer immediately after fuel has been spilt.
- Avoid any fuel contact with your clothing. Change your clothing instantly if fuel has been spilt on it (a danger hazard).
- Inspect the fuel cap at regular intervals making sure that it can be securely fastened.
- Carefully tighten the locking screw of the fuel tank. Move at least 10ft (3 meters) away from the refuelling point before starting engine (9).
- Never refuel in closed rooms. Fuel vapors accumulate at ground level (risk of explosions)
- Only transport and store fuel in approved containers. Make sure stored fuel is not accessible to children.
- Do not attempt to refuel a hot or a running engine.
- When mixing gasoline with two-stroke engine oil, use only gasoline which contains no ethanol or methanol (types of alcohol). This will help to prevent damage to fuel lines and other engine parts.
- Make sure the unit is properly assembled and in good operating condition.



Method of operation

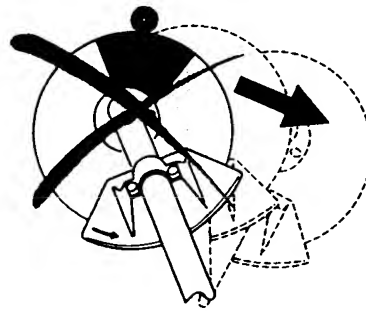
- Only use the brush cutter or string trimmer in good light and visibility. During the winter season beware of slippery or wet areas, ice and snow (risk of slipping). Always ensure a safe footing.
- Never cut above shoulder height.
- Never stand on a ladder and run the brush cutter or string trimmer.
- Never climb up into trees to perform cutting operation with the brush cutter or string trimmer.
- Never work on unstable surfaces.
- Remove sand, stones, nails etc. found within the working range. Foreign particles may damage the cutting tool and can cause dangerous kickbacks.
- Before commencing cutting, the cutting tool must have reached full working speed.



Kickback

- When operating the brush cutter, uncontrolled kickback may occur.
- This is particularly the case when attempting to cut within a blade segment between 12 and 2 o'clock.
- Never apply this segment of the brush cutter to solids, such as bushes and trees, etc., having a diameter in excess of 3 cm.
- The brush cutter will then be deflected at great force with the attendant risk of injuries.
- Never apply the brush cutter within a segment between 12 and 2 o'clock.

Caution:
Kickback



Diagrammatic
figure

Kickback prevention

To avoid kickbacks, observe the following:

- Operation within a blade segment between 12 and 2 o'clock presents positive hazards, especially when using metal cutting tools.
- Cutting operations within a blade segment between 11 and 12 o'clock, and between 2 and 5 o'clock, must only be performed by trained and experienced operators, and then at their own risk.
- Easy cutting with almost no kickback is possible within a blade segment between 8 and 11 o'clock.

Cutting Tools

Employ only the correct cutting tool for the job in hand.

Nylon cutting head:

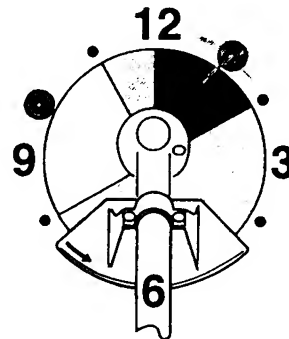
Exclusively designed for cutting along wall, fences, grass edges, trees, posts etc. (supplementing the grass mower).

Star blade:

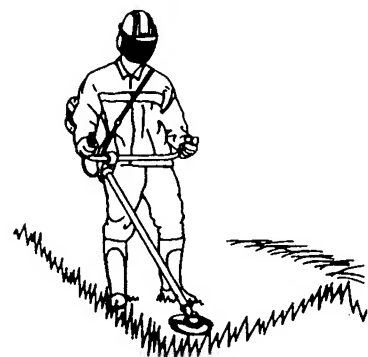
For cutting thick materials, such as weed, high grass, bushes, shrubs, underwood, thicket etc. (max. 2 cm dia. thickness). Perform this cutting work by swinging the brush cutter evenly in half-circles from right to left (similar to using a scythe).

Maintenance instructions

- The condition of the cutter, in particular of the cutting tool of the protective devices and also of the shoulder strap must be checked before commencing work. Particular attention is to be paid to the cutting blades which must be correctly sharpened.
- Turn off the engine and remove spark plug connector when replacing or sharpening cutting tools, and also when cleaning the cutter or cutting tool.



Diagrammatic
figure



- Never straighten or weld damaged cutting tools.
- Operate the brush cutter or string trimmer with as little noise and contamination as possible. In particular check the correct setting of the carburetor.
- Clean the brush cutter or string trimmer at regular intervals and check that all screws and nuts are well tightened.
- Never service or stone the brush cutter or string trimmer in the vicinity of naked flames.
- Always store the brush cutter or string trimmer in locked rooms and with an emptied fuel tank.

Observe the relevant accident prevention instructions issued by the relevant trade associations and by the insurance companies. Do not perform any modifications on the brush cutter or string trimmer as this will endanger your safety.

The performance of maintenance or repair work by the user is limited to those activities as described in the instruction manual. All other work is to be done by Authorized Service Agent.

Use only genuine spare parts and accessories released and supplied by MAKITA.

Use of non-approved accessories and tools means increased risk of accidents. MAKITA will not accept any liability for accidents or damage caused by the use of non-approved cutting tools and fixing devices of cutting tools, or accessories.

First aid

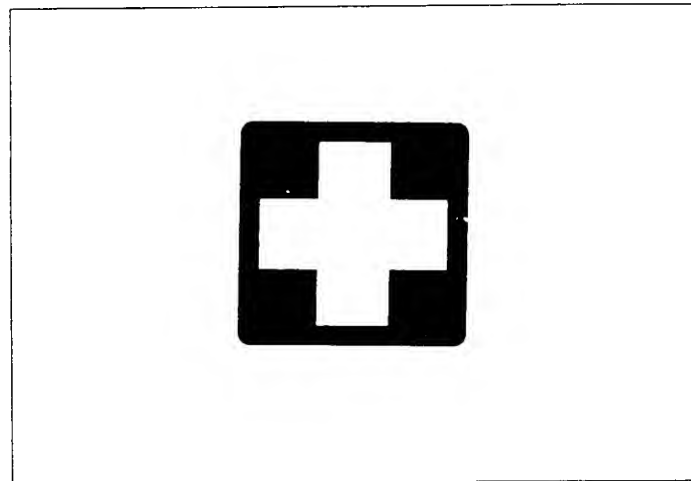
In case of accident make sure that a first-aid box is available in the vicinity of the cutting operations. Immediately replace any item taken from the first aid box.

When asking for help, please give the following information:

- Place of accident
- What happened
- Number of injured persons
- Kind of injuries
- Your name

Packaging

The MAKITA brush cutter or string trimmer will be delivered in two protective cardboard boxes to prevent transport damage. Cardboard is a basic raw material and is therefore consequently reusable or suitable for recycling (waste paper recycling).



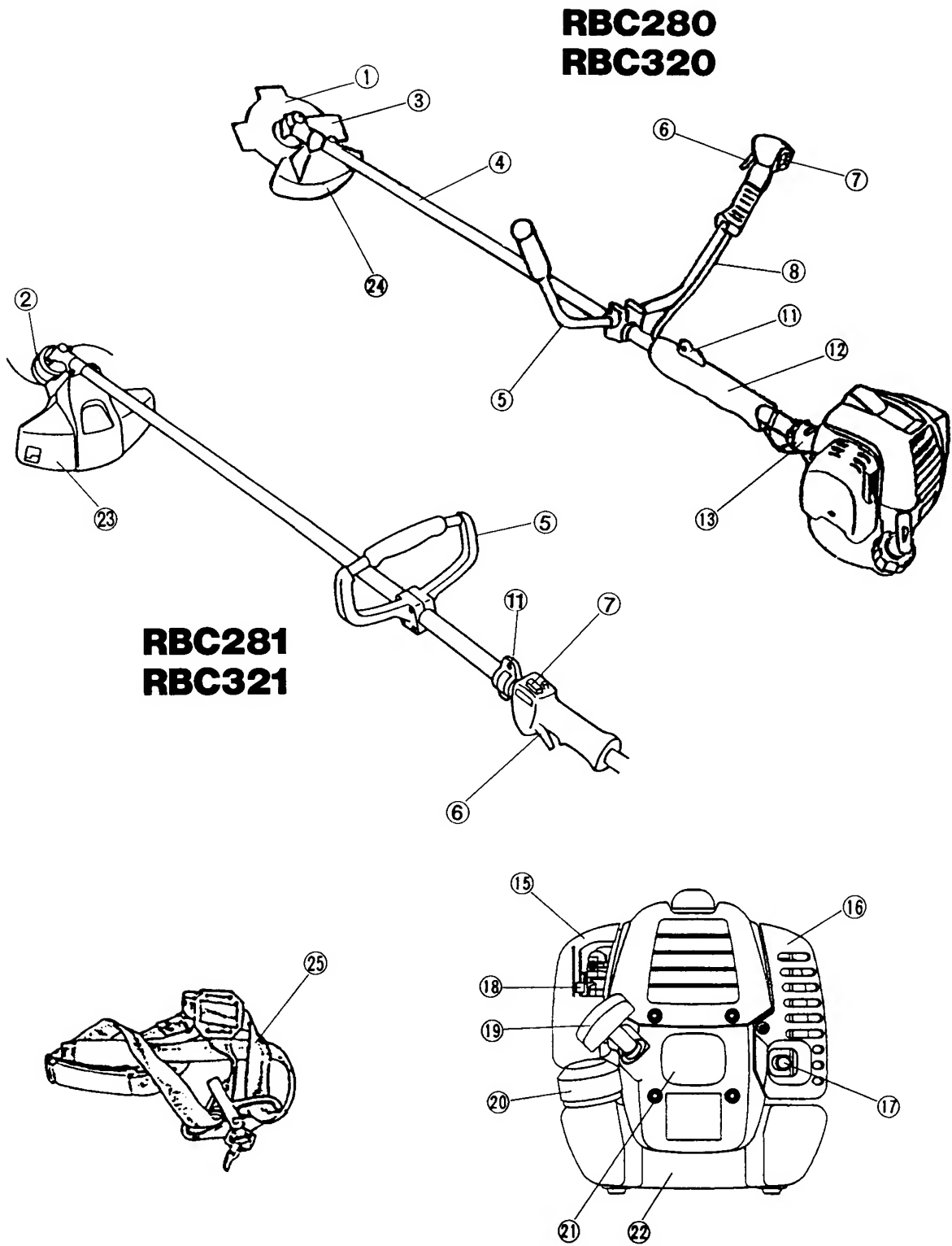
SPECIFICATION

Model		RBC280	RBC320
Dimensions (mm) (L x W x H)	(mm)	1,795 x 590 x 340 (70-5/8" x 23-7/32" x 13-3/8")	
Weight	(kg)	5.9	5.9
Revolution of cutter head	(rpm)	6,000	
Gear ratio		13/19	13/19
Clutch		Automatic centrifugal type	
Engine		EC027G	EC031G
Displacement	(cc)	27.2	30.5
Power rating	(PS)	1.1	1.3
Carburetor		All position diaphragm type	
Starting system		Recoil starter	
Ignition system		Solid state ignition	
Spark Plug		NGK-BM7A or equivalent	
Fuel Tank	(ℓ)	0.8 (0.77 quarts)	
Fuel		Mixed gas (Gasoline : Makita Two-stroke Engine oil = 50 : 1)	

Model		RBC281	RBC321
Dimensions (mm) (L x W x H)	(mm)	1,795 x 240 x 245 (70-5/8" x 9-7/16" x 9-5/8")	
Weight	(kg)	5.9	5.9
Revolution of cutter head	(rpm)	6,000	
Gear ratio		13/19	13/19
Clutch		Automatic centrifugal type	
Engine		EC027G	EC031G
Displacement	(cc)	27.2	30.5
Power rating	(PS)	1.1	1.3
Carburetor		All position diaphragm type	
Starting system		Recoil starter	
Ignition system		Solid state ignition	
Spark Plug		NGK-BM7A or equivalent	
Fuel Tank	(ℓ)	0.8 (0.77 quarts)	
Fuel		Mixed gas (Gasoline : Makita Two-stroke Engine oil = 50 : 1)	

NOTE : Specification are subject to change without notice.

DESIGNATION OF PARTS



DESIGNATION OF PARTS		DESIGNATION OF PARTS		DESIGNATION OF PARTS		DESIGNATION OF PARTS	
1	Metal Blade	7	STOP Switch	20	Fuel Filler Cap		
2	Nylon Cutting Head	8	Throttle Wire	21	Recoil Starter		
3	Gear Case	9	Handle Joint	22	Fuel Tank		
4	Drive Shaft	11	Hanger	23	Guard (for Nylon Cutting Head)		
5	Handle	12	Waist Pad	24	Guard (for Metal Blade)		
6	Throttle Lever	13	Holder Case	25	Shoulder Strap		

ASSEMBLY OF ENGINE

CAUTION : Before performing any work on the brush cutter or the string trimmer, always switch off the motor and pull the spark plug connector off the spark plug. Beware of hot engine parts and sharp blade edges. Always wear protective gloves!

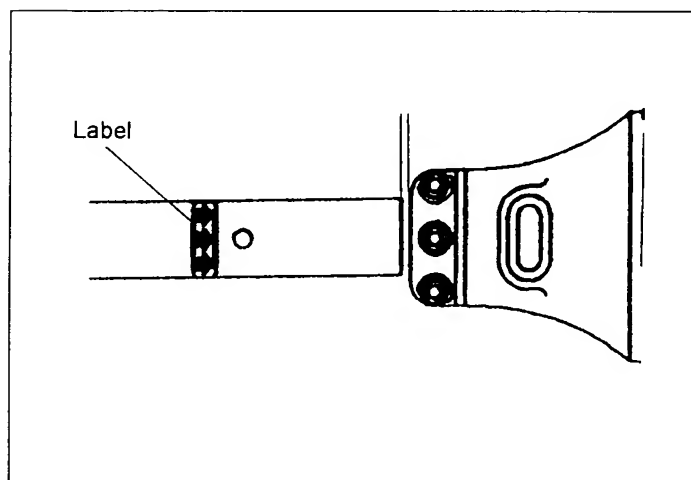
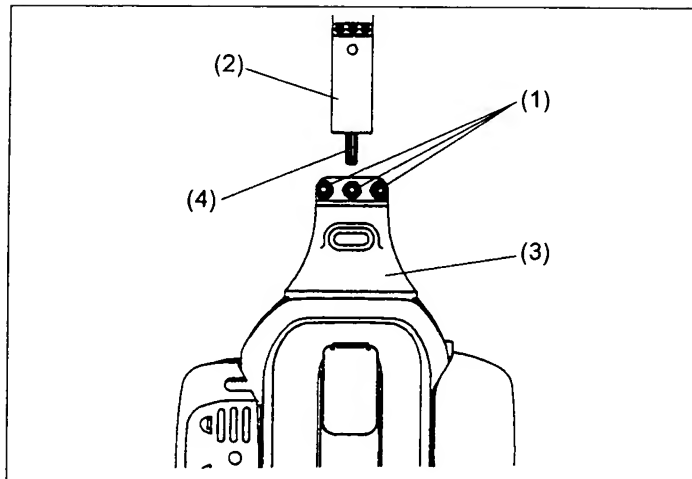
CAUTION : Start the brush cutter or the string trimmer only after having assembled it completely.

1. Loosen the screws (1) and insert the drive shaft into the holder case.

(Note)

Always insert the drive shaft (2) into the holder case (3) fully. If the inner shaft (4) resists full insertion of the drive shaft, try to insert it again after slightly rotating the drive shaft or the support washer on the gear case to match the inner shaft to the hole inside the holder case.

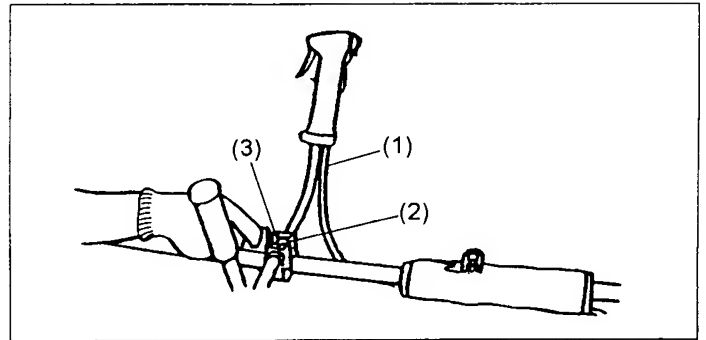
2. After making sure that the drive shaft is installed fully and properly, tighten the screws (1) to secure the drive shaft.



MOUNTING OF HANDLE

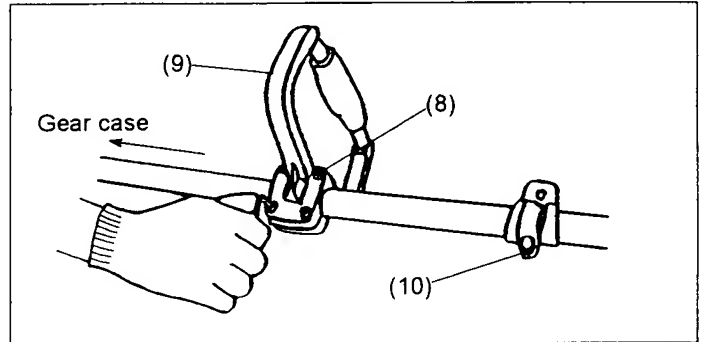
For RBC280 and RBC320

- Adjust the handle (1) to the proper position and secure the handle joint (2) by tightening the four socket head bolts M5 (3) evenly.
- Pass the throttle wire through the handle joint.



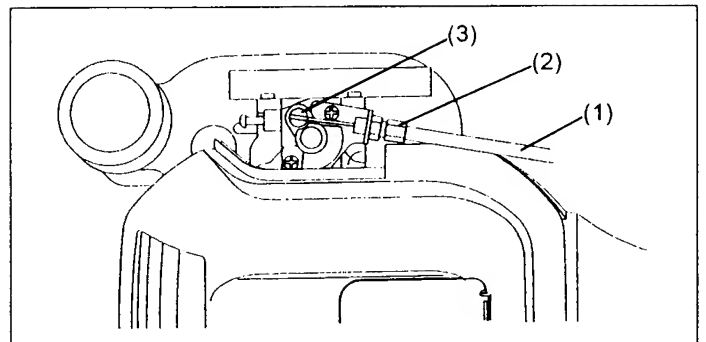
For RBC281 and RBC321

- Secure the loop handle (9) by tightening the four socket head bolts (8)
- The standard position of the handle is 200 to 250 mm from the hanger (10). Position the handle according to a worker's stature and working conditions.

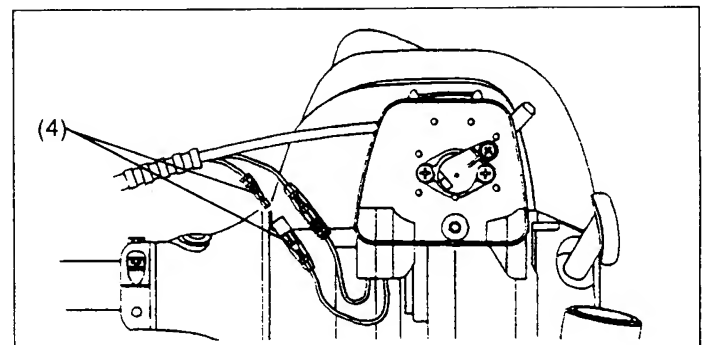


Assembly of throttle wire and ignition wire

- Remove the air cleaner cover from the carburetor.
- Insert throttle wire (1) through adjusting screw (2) and fit the nipple of the throttle wire into swivel (3) of the carburetor.
- Adjust the adjusting screw to take up free play of the throttle wire ensuring the throttle is fully opened when the throttle lever is in high speed position and 2 - 3 mm (0.079" - 0.118") free play when in low speed position.

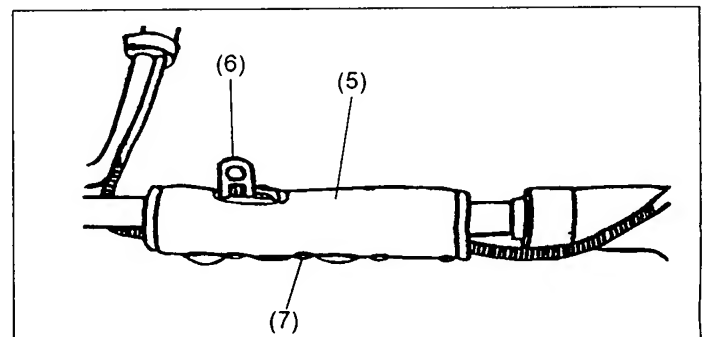


- Connect the female and male bullet connectors (4) from the throttle assembly to the male and female bullet connectors coming from engine.
- Retouch the air cleaner cover.



For machines with U handle

- Place the waist pad (5) over the throttle wire (guide the hanger (6) through the slot in the waist pad).
- Position the throttle wire in the waist pad and snap the waist pad together (snaps. (7)).



MOUNTING OF GUARD

To meet the applicable safety provisions, only the tool/guard combinations as indicated in the table must be used. Failure to do so may result in serious injury or death to user or bystanders.

Be sure to use genuine MAKITA cutter blade or nylon cutter head.

- The cutter blade must be well clean, sharp and free of cracks or breakage.
If the cutter blade contacts any hard objects or stones during operation, stop the engine and check the blade immediately.
- Clean and sharpen or replace the cutter blade at least every three hours of operation.

For RBC280

- The outside diameter of the cutter blade must not exceed 230 mm (9-1/16"). Never use any blades surpassing 230 mm (9-1/16") in outside diameter.

For RBC320

- The outside diameter of the cutter blade must not exceed 255 mm (10-1/32"). Never use any blades surpassing 255 mm (10-1/32") in outside diameter.

CAUTION : The appropriate guard must always be installed, for your own safety and in order to comply with accident-prevention regulations.

Operation of the equipment without the guard being properly in place must never be attempted.

For RBC280, RBC320

- Install the clamp on the drive shaft so that the projection of the clamp is inserted into the opening between the gear case and the drive shaft.
Secure the guard with the installation bolts M6 x 30 (1).

For RBC281, RBC321

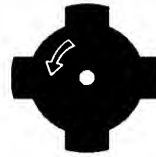
- Install the clamp on the drive shaft so that the projection of the clamp is inserted into the opening between the gear case and the drive shaft.
Secure the guard with the installation bolts M6 x 30 (1).



RBC280 and RBC320

Star Blade

Guard for Metal Cutter Blade



(RBC280) Part No. 6208501400

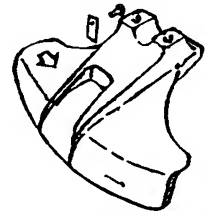
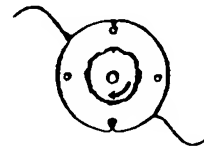
(RBC320) Part No. 6308503700

Part No. 6258028002

RBC281 and RBC321

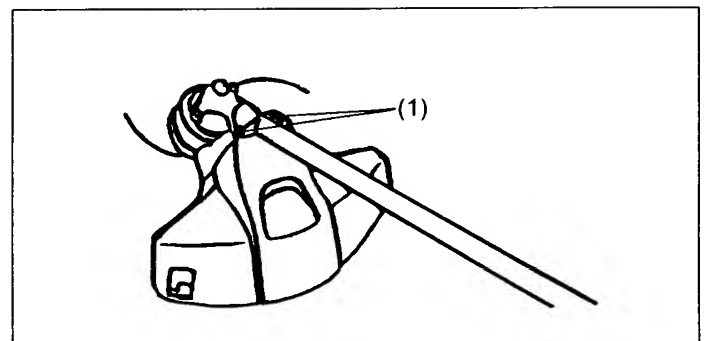
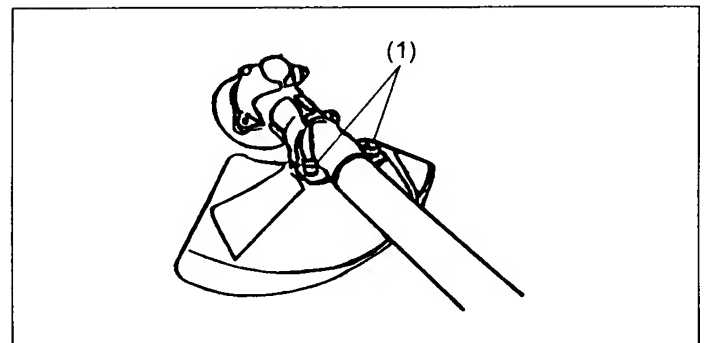
Nylon cutting Head

Guard for Nylon Cutting Head



Part No. 6218015001

Part No. 6218008002

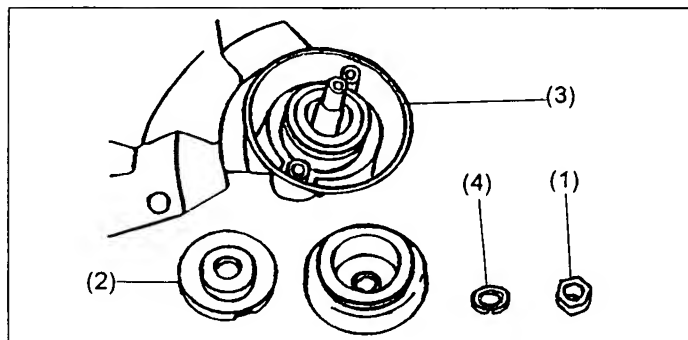


MOUNTING OF CUTTER BLADE

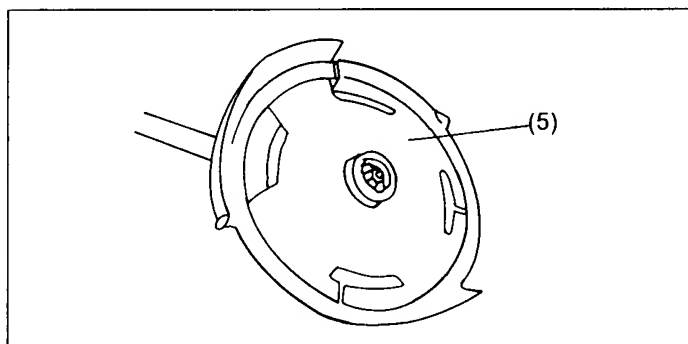
Turn the machine upside down, and you can replace the cutter blade or the nylon cutting head easily.

For RBC280, RBC320

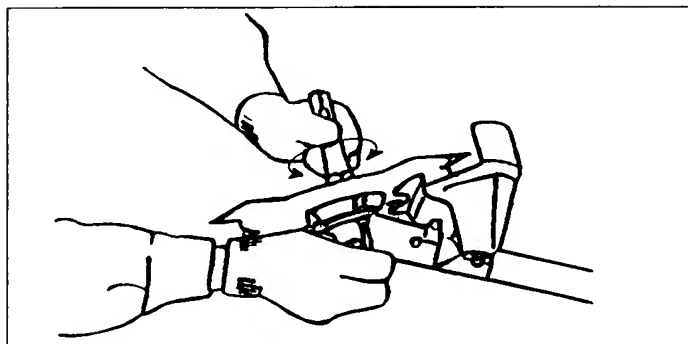
- Remove the nut from the shaft by turning the tightening nut (1) clockwise (left-hand thread).
- Remove the tightening washer (2).



- Place the blade (5) on the support washer (3).
- Put on the tightening washer and the spring washer (4).
- Tighten the tightening nut by hand.



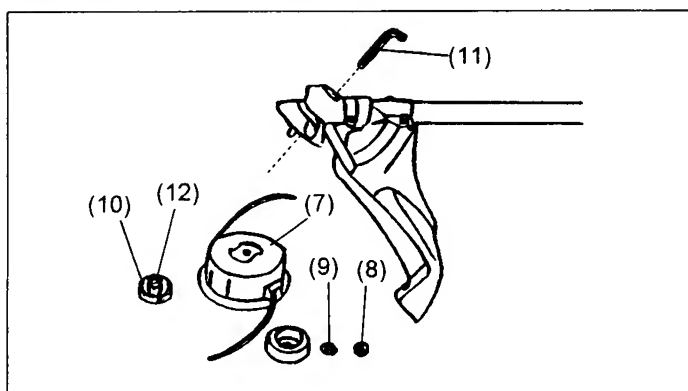
- Insert the socket-head wrench through the hole in the gear case and turn the box wrench until the support washer will be locked with its notch.
- Then tighten the tightening nut securely with left-hand thread spring washer and tightening nut. (Tighten them counter-clockwise.) (Tightening torque: 130 - 230 kg-cm (115-200 in-lb))
- The cutter blade-fastening nut (with spring washer) is a consumable part. If there appears any wear or deformation on the spring washer, replace the nut.
- Remove the blade cover.
- Disassemble in the reverse order.
- When mounting or dismounting the cutter blade, be sure to wear gloves for your safety.



MOUNTING OF NYLON CUTTING HEAD

For RBC281, RBC321

- To install the nylon cutting head (7), remove the tightening nut (8) and the spring washer (9) and support washer (10).
- Insert the socket-head wrench (11) through the hole in the gear case and turn the support washer until it will be locked with its notch (12) (or the shaft will be locked).
- Then screw the nylon cutting head onto the shaft by turning it counter-clockwise.
- Remove the socket-head wrench.



FUELS/REFUELLING

Handling petroleum products

Utmost care is required when handling fuel. Fuel may contain substances similar to solvents. Refuel either in a well ventilated area or outdoors. Do not inhale fuel vapors, avoid any contact of fuel or oil with your skin.

Mineral oil, fuel, etc., products degrease your skin. If skin comes in contact with these substances repeatedly or for an extended period of time, various skin diseases may result. In addition, allergic reactions are known to occur. Eyes can be irritated by contact with oil, fuel etc. If oil fuel, etc. comes into your eyes, immediately wash them with clear water. If your eyes are still irritated, see a doctor immediately!



Observe the safety Instructions on page 4

FUEL AND OIL MIXTURE

This product is powered by two-stroke engine and requires pre-mixing gasoline and two stroke oil inspect the fuel tank and fill with clean, fresh fuel and oil of the proper mixture to assure the longer life of the tool. Use the following mixed gas.

- Gasoline : Makita genuine two-stroke engine oil = 50:1 or
- Gasoline : Other manufacturer's two-stroke engine oil = 25:1 recommended

FOR CALIFORNIA REGULATION:

THIS EQUIPMENT IS CERTIFIED TO OPERATE ON GASOLINE + TWO-STROKE ENGINE OIL

WHEN MIXING GASOLINE WITH TWO-STROKE ENGINE OIL, USE ONLY GASOLINE WHICH CONTAINS NO ETHANOL OR METHANOL (TYPES OF ALCOHOL). THIS WILL HELP TO AVOID POSSIBLE DAMAGE TO ENGINE FUEL LINES AND OTHER ENGINE PARTS. MIX FUEL IN CONTAINER APPROVED FOR GASOLINE. DO NOT MIX GASOLINE AND OIL DIRECTLY IN THE FUEL TANK.

IMPORTANT:

Failure to follow proper fuel mix instructions may cause damage to the engine.

CAUTION:

- When preparing fuel mixture, mix only the amount needed for the job you are to do. Do not use fuel mixture that has been stored longer than two months. Fuel mixture stored longer than this will cause hard starting and poor performance. If fuel mix has been stored longer than this time, it should be removed and filled with a fresh mixture.
- Never fill the fuel to the very top.
- Never add fuel to the tank in a closed unventilated area.
- Do not add fuel to this unit close to an open fire or sparks.
- Be sure to wipe off spilled fuel before attempting to start the engine.
- Do not attempt to refuel a hot engine.

Refuelling

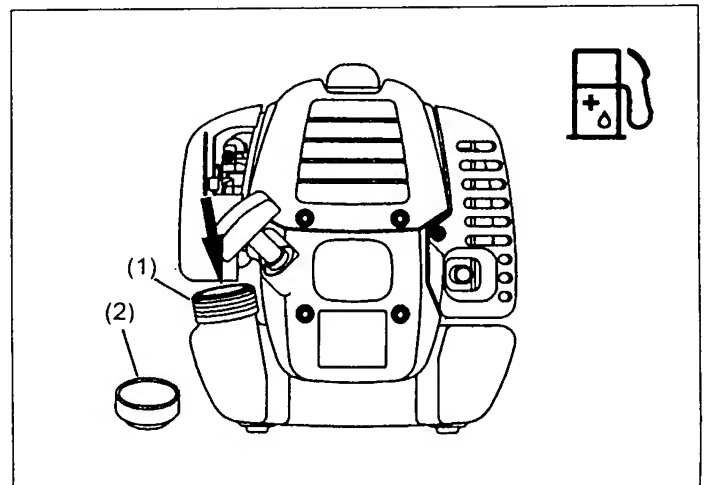
Never perform refuelling operations in a closed, unventilated area.

The engine must be switched off!

- Thoroughly clean the area around the gas cap (1). To prevent dirt from gelling into the fuel tank.
- Unscrew the gas cap (2) and fill the tank with fuel.
- Never fill the fuel tank to the very top.
- Securely screw on the gas cap (2).
- Wipe the screw plug and tank with an absorbent after refuelling! Allow cloths to dry and discard in a proper container.

Storage of fuel

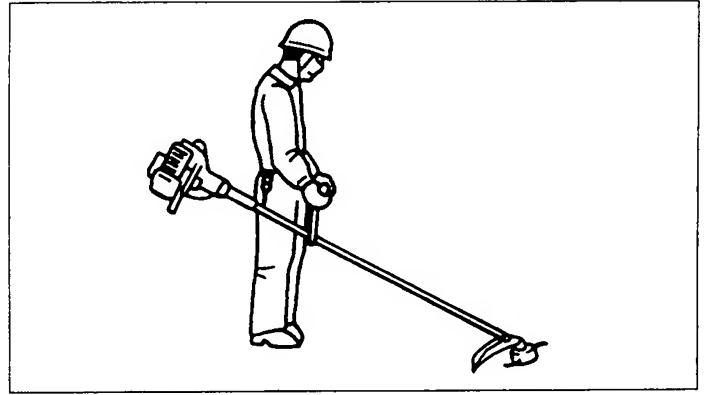
Fuel cannot e stored for an unlimited period of time. Purchase only the qunhtity required for a 4 week operating period. Only use approved fuel storage containers.



PROPER HANDLING OF MACHINE

Attachment of shoulder strap

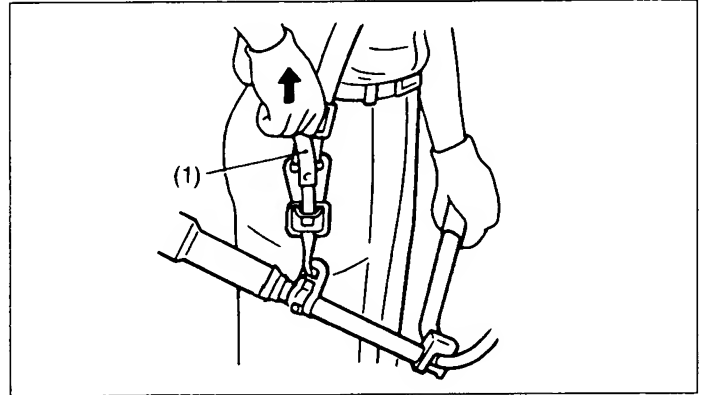
- Adjust the strap length so that the cutter blade will be kept parallel with the ground.



Detachment

- In an emergency, pull the release belt (1) strongly upward, and you can quickly detach the machine from the shoulder strap. Be extremely cautious to maintain control of the machine at this time. Do not allow the machine to be deflected toward you or anyone in the work vicinity.

WARNING: Failure to maintain complete control of the machine at all times could result in serious bodily injury or DEATH.



BRUSH CUTTER OPERATION

Observe the applicable accident prevention regulations!

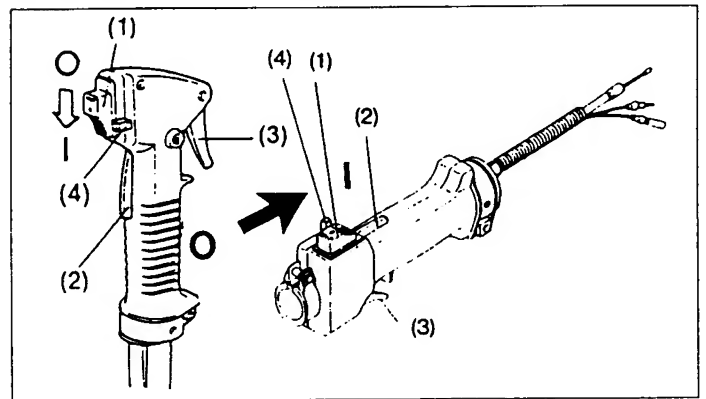


Starting

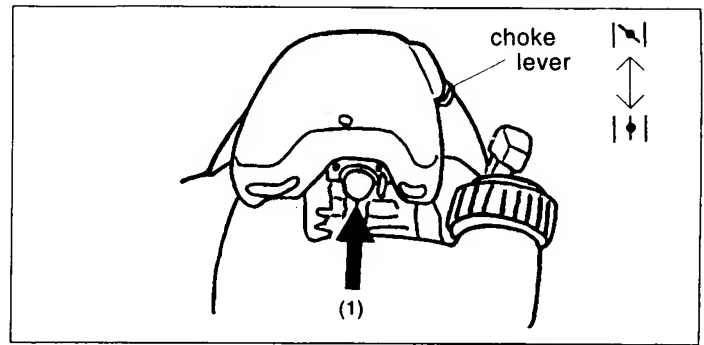
Move at least 10feet (3m) away from the place of refuelling. Place the brush cutter or string trimmer on an open area of ground taking care that the cutting tool does not come into contact with the ground or any other objects. Make sure that this area is clear of combustible materials.

Cold start

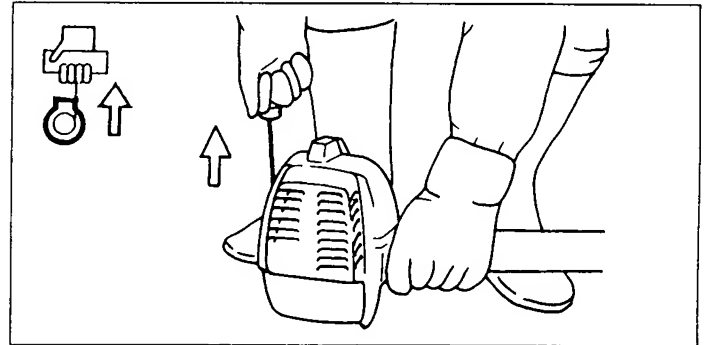
- Push the I-O switch (1) in the direction shown by the arrow.
- Grasp the handle (hand pressure activates the safety lock-off lever (2)).
- Press the throttle lever (3) and hold it down.
- Press the lock button (4) and release the throttle lever. Then release the lock button (the lock button holds the throttle lever at the proper start-up position).



- First place the machine on the ground.
- Give a gentle push on the primer pump (1) repeatedly (7-10 times) until fuel comes into the primer pump.
- Move the choke lever (2) to the top position (| ↗ |)



- Firmly hold the clutch case with your left hand, as illustrated at right.
- Slowly withdraw the starter grip until resistance is felt and continue with a rapid pull.
- Do not pull the starter rope to its extent and do not allow the starter handle to be retracted uncontrolled, but ensure that it is retracted slowly.
- Repeat the starting operation until initial engine ignitions are heard.
- Depress the choke lever (| ↓ |) and pull the starter rope again until the engine starts.
- As soon as the engine starts, immediately squeeze and release the throttle, thus releasing the lock button so that the engine can run at idle.
- Run the engine for approximately one minute at a moderate speed to allow warm-up before applying full throttle.



Caution during operation:

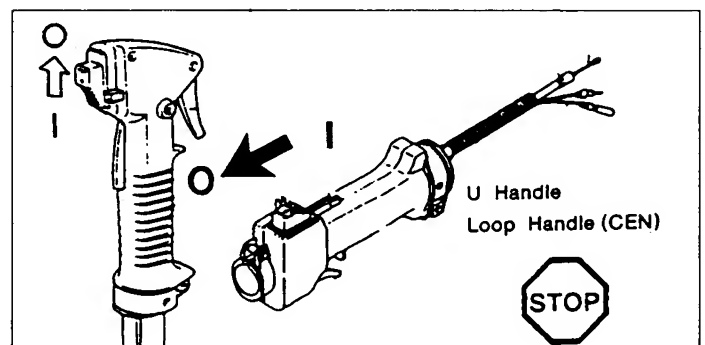
If the throttle lever is opened fully in a no-load operation, the engine rotation is increased to 10,000rpm or more. Never operate the engine at a higher speed than required (at an approximate speed of 6,000 - 8,000rpm).

Starting the warm engine

- As described above, except without moving the choke lever (choke lever remains in the down position (| ↓ |))

Stopping

- Release the throttle lever fully, and when the engine rpm has lowered, push the stop switch to "O" position. Engine will stop.



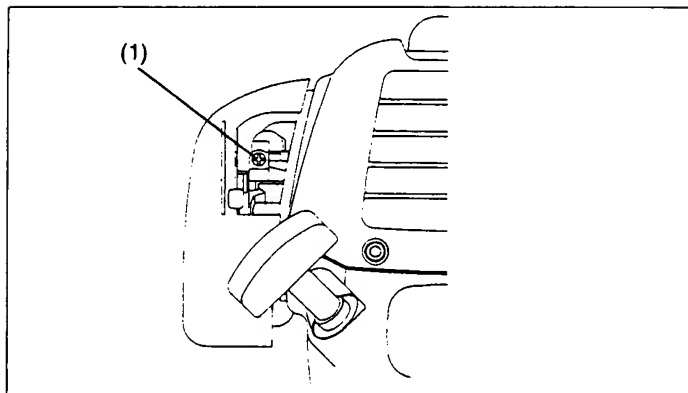
IDLE ADJUSTMENT

- Never attempt to make engine adjustments while the unit is running and strapped to the operator. Always make engine adjustments with the unit resting on a flat, clear surface.

The cutter blade or the nylon cutting head should not run when the throttle lever is fully released. If necessary, adjust the idle rpm using the idle adjusting screw.

Checking the Idle speed

- Idle speed should be set to 2,600rpm.
If necessary correct it by means of the idle adjustment screw (the blade must not turn when the engine is on idle).
Turning the screw (1) clockwise will cause an increase in the engine speed, whereas turning the screw counterclockwise will reduce the engine speed.



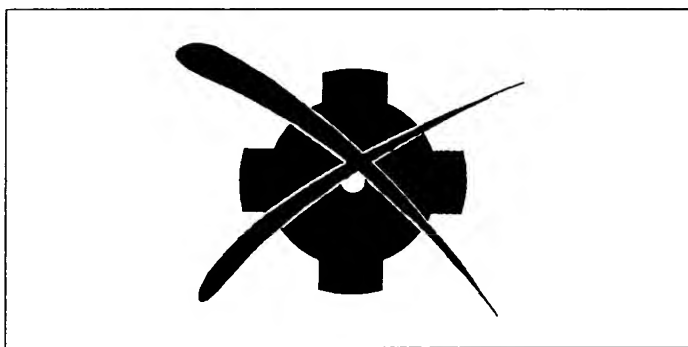
RESHARPENING THE CUTTER BLADE

CAUTION: The cutter blades mentioned below must only be resharpened by an authorized facility. Manual resharpening will result in imbalances of the cutting tool causing potentially dangerous vibration and damage to the equipment.

Star blade

An expert resharpening and balancing service is provided by your Authorized Service Agent.

NOTE : To increase the service life of the star blade it may be turned over once, until both cutting edges have become dull. Never continue to use a dull blade or kickback and serious injury may result.



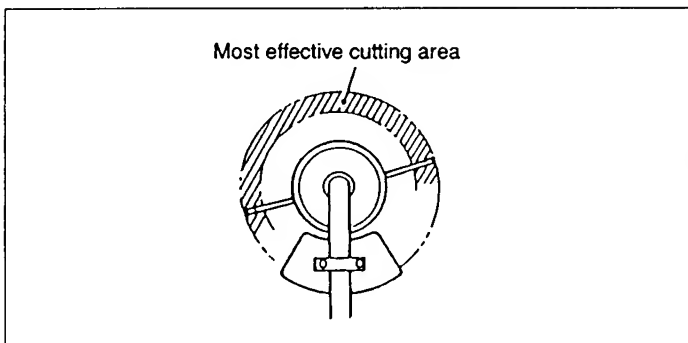
Nylon cutting head

The nylon cutting head is a dual string trimmer head capable of both automatic and bump & feed mechanisms.

The nylon cutting head will automatically feed out the proper length of nylon cord by the changes in centrifugal force caused by increasing or decreasing rpms. However, to cut soft grass more efficiently, bump the nylon cutting head against the ground to feed out extra cord as indicated under operation section.

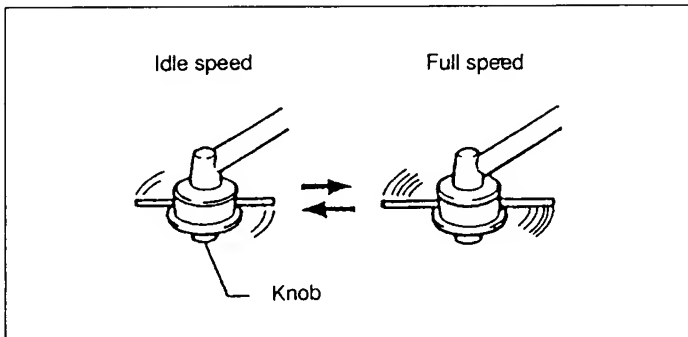
Operation

- Increase the nylon cutting head speed to approx. 6,000rpm.
Low speed (under 4,800rpm) is not suitable, the nylon cord will not feed out properly at low speed.
- The most effective cutting area is shown by the shaded area.



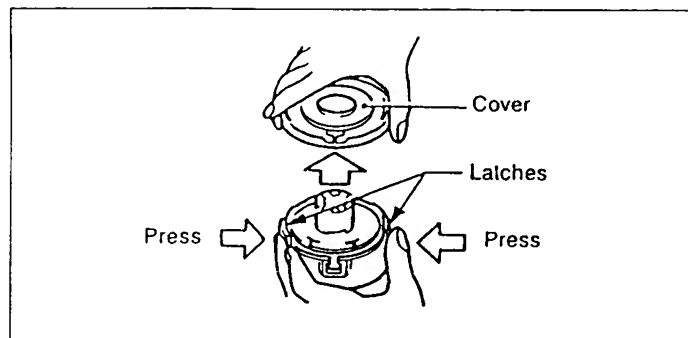
If the nylon cord does not feed out automatically, proceed as follows:

1. Release the throttle lever to run the engine idle and then squeeze the throttle lever fully. Repeat this procedure until the nylon cord feeds out to the proper length.
2. If the nylon cord is too short to feed out automatically with the above procedure, bump the knob of the nylon cutting head against the ground to feed out the nylon cord.
3. If the nylon cord does not feed out with procedure 2, rewind/replace the nylon cord by following the procedures described under "Replacing the nylon cord".

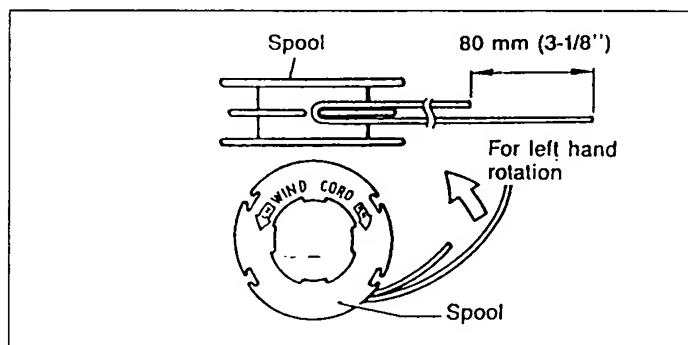


Replacing the nylon cord

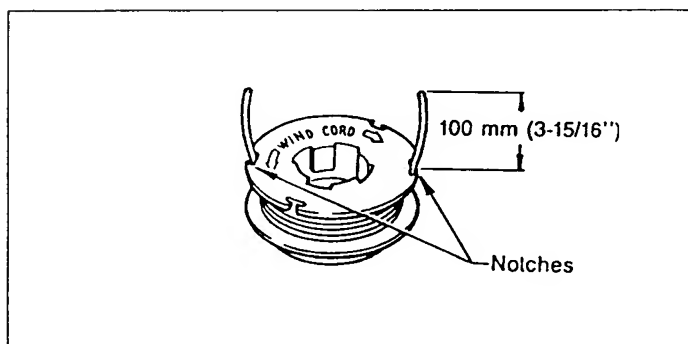
- First, stop the engine.
- Press on the housing latches to lift off the cover, then remove the spool.



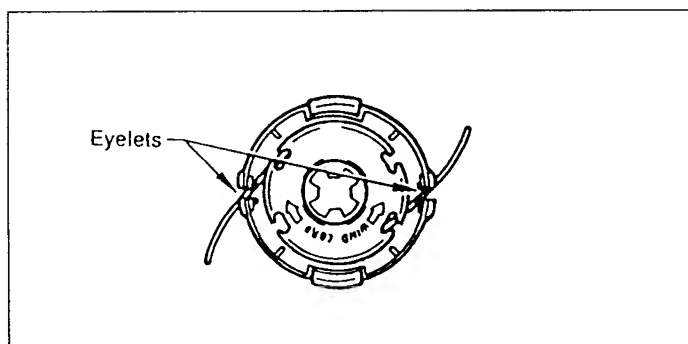
- Hook the center of new nylon cord into the notch in the center of the spool, with one end of the cord extending about 80 mm (3-1/8") more than the other. Then wind both ends firmly around the spool in the direction of the head rotation (left-hand direction indicated by LH and right-hand direction by RH on the side of the spool).



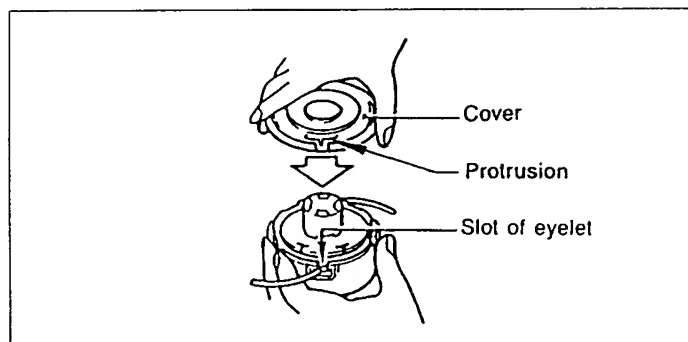
- Wind all but about 100 mm (3-15/16") of the cords, leaving the ends temporarily hooked through a notch on the side of the spool.



- Mount the spool in the housing so that the grooves and protrusions on the spool match up with those in the housing. Keep the side with letters on the spool visible on the top. Now, unhook the ends of the cord from their temporary position and feed the cords through the eyelet's to come out the housing.



- Align the protrusion on the underside of the cover with the slots of the eyelet's. Then push the cover firmly onto the housing to secure it.



MAINTENANCE

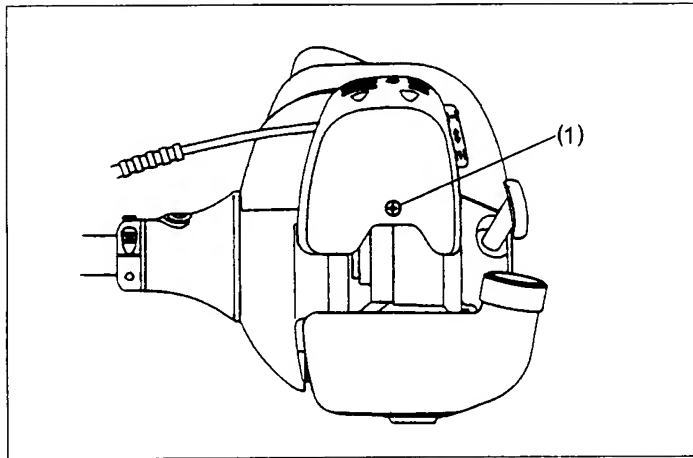


CAUTION: Before doing any work on the brush cutter or string trimmer, always switch off the motor and pull the plug cap off the spark plug (see "Checkup of spark plug").
Always wear protective gloves!
To ensure a long service life and to avoid any damage to the equipment, the following servicing operations should be performed at regular intervals.

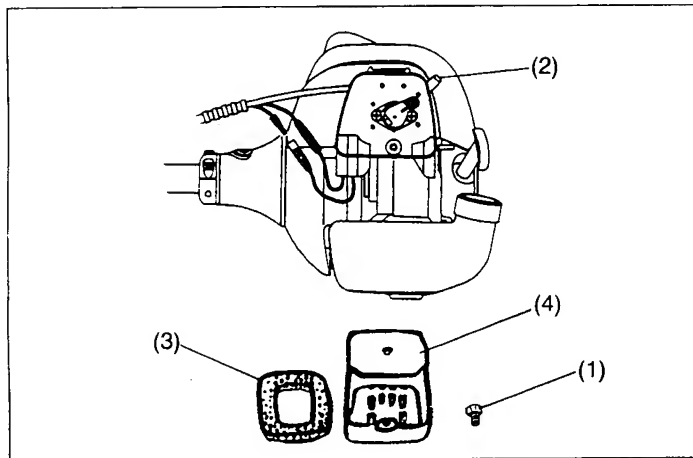
Daily checkup and maintenance

- Before operation, check the machine for loose screws or missing parts. Pay particular attention to the tightness of the cutter blade.
- Before operation, always check for clogging of the cooling air passage and the cylinder fins. Clean them if necessary. Every 8 hours (Daily)
- Perform the following work daily after use:
 - Clean the brush cutter or the string trimmer externally and inspect for damage.
 - Clean the air filter. When working under extremely dusty conditions, clean the filter the several times a day.
 - Check the blade or the nylon cutting head for damage and make sure it is firmly mounted.
 - Check that there is sufficient difference between idling and engagement speed to ensure that the cutting tool is at a standstill while the engine is idling (if necessary reduce idling speed).
If under idling conditions the tool should still continue to run, consult your nearest Authorized Service Agent.
- Check the functioning of the stop switch, the lock-off lever, the throttle lever, and the lock button.

Cleaning of air cleaner Every 8 hours (Daily)



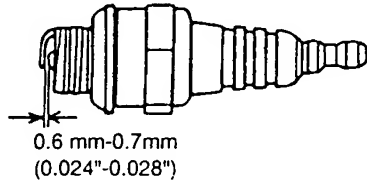
- Unscrew screw (1)
- Remove the air cleaner cover.



- Push the choke lever (2) up (arrow) to prevent dirt particles from entering the carburetor.
- Remove the sponge element (3). Wash it with lukewarm water and then dry it thoroughly.
- After cleaning the air cleaner, install the air cleaner cover (4) and tighten the screw (1) to secure.

NOTE : If there is excessive dust or dirt adhering to the air cleaner, clean it every day. A clogged air cleaner may make it difficult or impossible to start the engine or increase the engine rotational speed.

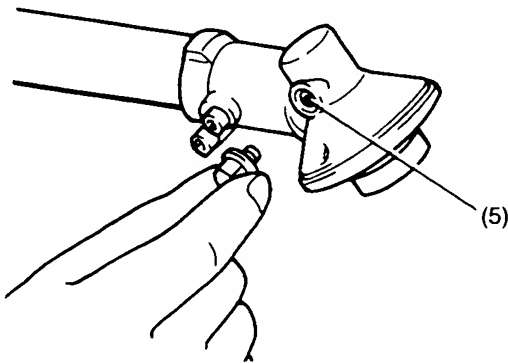
Checkup of spark plug



- Only use the supplied universal wrench to remove or to install the spark plug. This engine uses NGK-BM7A
- The gap between the two electrodes of the spark plug should be 0.6 to 0.7 mm (0.024" - 0.028"). If the gap is too wide or too narrow, adjust it. If the spark plug is clogged with carbon or fouled clean it. Thoroughly or replace it.

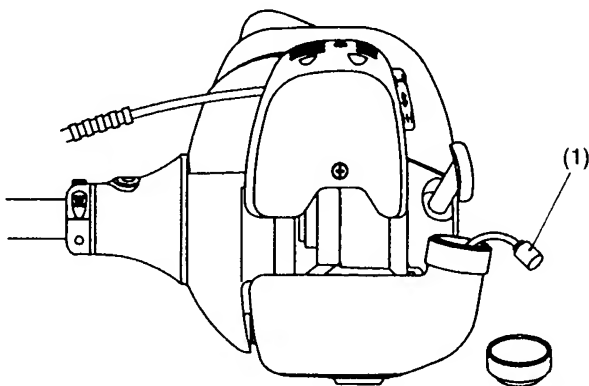
CAUTION : Never touch the spark plug connector while engine is running. (Charger of high voltage electric shock)

Supply of grease to gear case Every 30 hours



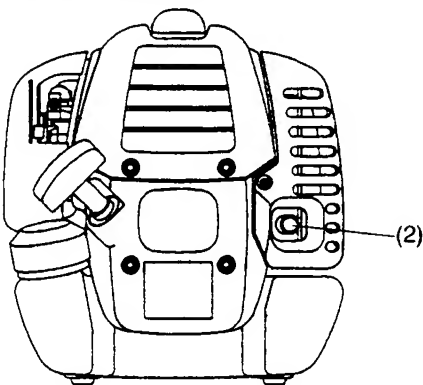
- Supply grease (Shell alvania No. 3 or equivalent) to the gear case through the greases hole (5)

Suction head in the fuel tank Every 50 hours (Monthly)



- The felt filter (1) of the suction head is used to filter the fuel required by the Carburetor.
- A periodical visual inspection of the felt filter is to be conducted. For that purpose open the tank cap, use a wire hook and pull out the suction head through the tank opening. Filters found to have hardened, been polluted or clogged up are to be replaced.
- Insufficient fuel supply can result in the admissible maximum speed being exceeded. It is therefore important to replace the felt filter at least quarterly to ensure satisfactory fuel supply to the Carburetor.

Cleaning of muffler exhaust port Every 50 hours (Monthly)



- Check of muffler exhaust port (2) regularly.
- If it is clogged by carbon deposits, carefully scratch the deposits out with a suitable tool.

Replace fuel lines : Every 200 hours (Yearly)

Overhaul engine : Every 200 hours (Yearly)

Replace packings and gaskets with new ones : Every time engine is reassembled.

To maintain product SAFETY and RELIABILITY, repairs, any other maintenance or adjustment should be performed by MAKITA Authorized or Factory Service Center, always using MAKITA replacement parts.

STORAGE

- When keeping the machine in storage for a long time, drain fuel from the fuel tank and carburetor, as follows : Drain all fuel from the fuel tank into container approved for gasoline. Give a gentle push on the primer pump repeatedly until all fuel is expelled out of the primer pump.
- Remove the spark plugs and add a few drops of oil into spark plug hole. Then, pull the starter gently. Confirm that oil film covers the engine inside and tighten the spark plug.
- Clear dirt or dust from outside of engine, wipe them with an oil-immersed cloth and keep the machine locked in a dry, well-ventilated place that is inaccessible to children. Keep away from corrosive agents such as garden chemicals and de-icing salts.
- Do not store in a closed area where fuel vapors can reach an open flame from hot water heaters, furnaces etc.
- Abide by all Federal and local regulations for the safe storage and handling of gasoline.

California Emission Control Warranty Statement

[This warranty does not apply in any other state.]

YOUR WARRANTY RIGHTS AND OBLIGATIONS

The California Air Resources Board and Makita U.S.A., Inc. are pleased to explain the emission control warranty on your 1995 and later utility and/or lawn and garden equipment engine. In California, new utility and lawn and garden equipment engine must be designed, built and equipped to meet the State's stringent anti-smog standards. Makita U.S.A., Inc. must warrant the emission control system on your utility and/or lawn and garden equipment engine for the periods of time listed below provided there has been no abuse, neglect or improper maintenance of your utility and/or lawn and garden equipment engine.

Your emission control system includes parts such as the carburetor or fuel injection systems, the ignition system and the catalytic converter. Also included are the hoses and connectors and other emission-related assemblies.

Where a warrantable condition exists, Makita U.S.A., Inc. will repair your utility and/or lawn and garden equipment at no cost to you including diagnosis, parts and labor.

MANUFACTURER'S WARRANTY COVERAGE:

The 1995 and later utility and/or lawn and garden equipment engines are warranted for two years. If any emission-related part on your engine is defective, the part will be repaired or replaced by Makita U.S.A., Inc.

OWNER'S WARRANTY RESPONSIBILITIES:

As the utility and lawn and garden equipment engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual. Makita U.S.A., Inc. recommends that you retain all receipts covering maintenance on your utility and/or lawn and garden equipment engine, but Makita U.S.A., Inc. cannot deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the utility and/or lawn and garden equipment engine owner, you should be aware, however, that Makita U.S.A., Inc. may deny you warranty coverage if your utility and/or lawn and garden equipment engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

You are responsible for presenting your utility and/or lawn and garden equipment engine to a Makita U.S.A., Inc. service center as a problem exists. The warranty repairs should be completed in a reasonable time, not to exceed 30 days.

If you have any questions regarding your warranty rights and responsibilities, you should contact a Makita Factory Service Center Manager nearest you. A list of the Factory Service Center locations and phone numbers is provided on page 24 for your convenience.

LIMITED WARRANTY

- California Only -

Makita U.S.A., Inc. a distributor of utility and lawn and garden equipment in the U.S., warrants to the owner of 1995 and later utility and/or lawn and garden equipment engines that the engine (1) has been designed, built, and equipped at the time of manufacture so as to conform with the applicable regulations of the California Air Resources Board, and (2) is free from defects in materials and workmanship which may cause it to fail to conform with those regulations as applicable according to the terms and conditions stated below.

WARRANTY PERIOD

The warranty period begins on the date which the utility and/or lawn and garden equipment engine is delivered to the original retail purchaser and ends two years after that date. During this two year period Makita U.S.A., Inc. warrants to the original retail purchaser and each subsequent purchaser that the engine is free from defect in material and workmanship that can cause the failure of a warranted emission-related part.

WHAT IS COVERED UNDER THIS WARRANTY

Repair and/or replacement of any warranted emission-related part will be performed at no charge provided the work is performed at an authorized warranty station. There will also be no charge for any diagnostic labor performed at an authorized warranty station which leads to the determination that a warranted emission-related part is defective.

Any warranted part which is not scheduled for replacement as required maintenance, or which is scheduled only for regular inspection to the effect of "repair or replace as necessary" shall be warranted for the warranty period. Any warranted part which is scheduled for replacement as required maintenance shall be warranted for the period of time up to the first scheduled replacement of the part. This warranty shall apply only towards the repair, replacement, and/or adjustment of the component parts listed below.

EMISSION-RELATED PARTS COVERED UNDER THIS WARRANTY

1. Fuel Metering Systems
 - (a) Carburetor and its internal parts
 - (b) Air cleaner plate
 - (c) Air cleaner case
 - (d) Air cleaner element
 - (e) Fuel filter
 - (f) Throttle stopper
2. Ignition Systems
 - (a) Spark Plug
 - (b) Flywheel Magneto
 - (c) Ignition Coil
3. Other Miscellaneous Items Used in Above Systems
 - (a) Fuel Hoses
 - (b) Sealing Gaskets

If it is determined by an authorized warranty station that other engine components have been damaged due to the failure of a warranted emission-related part during the warranty period, Makita U.S.A., Inc. will repair and/or replace the necessary components.

WHAT IS NOT COVERED UNDER THIS WARRANTY

This warranty does not cover any emission-related part which malfunctions, fails, or is damaged due to alterations and/or modifications such as changing, adding, or removing parts.

When an engine is being serviced under warranty, Makita U.S.A., Inc. and any of its authorized dealers, distributors, or warranty stations shall not be liable for any loss of use of the engine, for any damage to goods, or loss of time or inconvenience.

This limited warranty also does not apply to any emission-related part which malfunctions, fails, or is damaged due to failure to follow the maintenance and operating instructions specified in the 1995 and later Owner's Manual including:

- (a) Improper or inadequate maintenance of any warranted emission-related part.
- (b) Improper installation, adjustment, or repair of the engine or any warranted emission-related part unless performed by a factory authorized warranty station.
- (c) Failure to use recommended fuel as specified in the 1995 and later Owner's Manual.
- (d) Repairs and diagnosis performed outside of an authorized warranty station.
- (e) Use of parts which are not authorized by Makita U.S.A., Inc.

MAINTENANCE SCHEDULE

The engine owner is responsible for having all scheduled inspection and maintenance services performed at the intervals specified in the 1995 and later Owner's Manual and to retain records of these services as having been performed. These records should be transferred to each subsequent owner of the engine. Makita U.S.A., Inc., cannot deny a claim solely because there are no records of scheduled maintenance; however, a warranty claim may be denied if the failure to perform the scheduled maintenance and inspection resulted in the failure of a warranted emission-related part. As a minimum, the engine owner is responsible for the scheduled inspection and maintenance described below which are based on the procedures described in the Owner's Manual.

PROCEDURE

- (a) Check all nuts and bolts and tighten as necessary
- (b) Check air passages and engine cylinder fins for clogging.
Remove all obstructions as necessary.
- (c) Clean the air cleaner.
- (d) Check the spark plug. Clean and adjust it if necessary.
- (e) Check the muffler exhaust port. Clean it if necessary.
- (f) Check the fuel filter. If clogged, replace it with new filter.
- (g) Replace fuel lines.
- (h) Overhaul the engine.
- (i) Replace the packings and gaskets.

INTERVAL

- Every 8 hours of use or daily.
- Every 8 hours of use or daily.
- Every 8 hours of use or daily.
- Every 8 hours of use or daily.
- Every 50 hours of use or monthly.
- Every 50 hours of use or monthly.
- Every 200 hours of use or annually.
- Every 200 hours of use or annually.
- Every time the engine is reassembled.

REPAIR AND REPLACEMENT OF EMISSION-RELATED PARTS

It is recommended that only engine replacement parts which have been authorized and approved by Makita U.S.A., Inc. should be used in the performance of any warranty maintenance or repairs of emission-related parts. These replacement parts will be provided at no charge if the part is still under warranty.

HOW TO FILE A WARRANTY CLAIM AND WHERE TO GET WARRANTY SERVICES

Contact the nearest Makita Factory Service Center Manager to determine the appropriate location where the required warranty services are to be performed. A list of the Factory Service Center locations and phone numbers are provided below for your convenience.

14930 Northam Street
La Mirada, CA 90638-5753
(714) 522-8088

41850 Christy Street
Fremont, CA 94538-5107
(510) 657-9881

1421N. Clovis Ave., Ste. 112
Fresno, CA 93727
(209) 252-5166

7674 Clairemont Mesa Blvd.
San Diego, CA 92111
(619) 278-4471

1440 South "E" Street
San Bernardino, CA 92408
(909) 885-1289

1714 E McFadden Ave., Unit M
Santa Ana, CA 92705
(714) 667-5066

16735 Saticoy St., Ste. 105
Van Nuys, CA 91406
(818) 782-2440

1970 Fulton Avenue
Sacramento, CA 95825
(916) 482-5197

1565 Winchester Blvd.
Campbell, CA 95008-0501
(408) 379-0377

FEDERAL EMISSION COMPONENT DEFECT WARRANTY

EMISSION COMPONENT DEFECT WARRANTY COVERAGE - This emission warranty is applicable in all States, except the State of California

Makita U.S.A., Inc., La Miranda, California, (herein "MAKITA") warrant to the initial retail purchaser and each subsequent owner, that this utility equipment engine (herein "engine") was designed, built, and equipped to conform at the time of initial sale to all applicable regulations of the U.S. Environmental Protection Agency (EPA), and that the engine is free of defects in materials and workmanship which would cause this engine to fail to conform with EPA regulations during its warranty period.

For the components listed under PARTS COVERED, Makita Factory Service Center or service center authorized by MAKITA will, at no cost to you, make the necessary diagnosis, repair, or replacement necessary to ensure that the engine complies with applicable U.S. EPA regulations.

EMISSION COMPONENT DEFECT WARRANTY PERIOD

The warranty period for this engine begins on the date of sale to the initial purchaser and continues for a period of 2 years.

PARTS COVERED

Listed below are the parts covered by the Emission Component Defect Warranty. Some of the parts listed below may require scheduled maintenance and are warranted up to the first scheduled replacement point for that part.

- 1) Fuel Metering System
 - (i) Carburetor and internal parts
 - (ii) Fuel filter, if applicable
 - (iii) Throttle stopper, if applicable
 - (iv) Choke System, if applicable
- 2) Air Induction System
 - (i) Air cleaner plate
 - (ii) Air cleaner case
 - (iii) Air cleaner element
- 3) Ignition System
 - (i) Spark plug
 - (ii) Flywheel Magneto
 - (iii) Ignition Coil
- 4) Miscellaneous Items Used in Above Systems
 - (i) Fuel hoses, clamps and sealing gaskets

OBTAINING WARRANTY SERVICE

To obtain warranty service, take your engine to the nearest Makita Factory Service Center or Service Center authorized by MAKITA. Bring your sales receipts indicating date of purchase for this engine. The dealer or service center authorized by MAKITA will perform the necessary repairs or adjustments within a reasonable amount of time and furnish you with a copy of the repair order. All parts and accessories replaced under this warranty become the property of MAKITA.

WHAT IS NOT COVERED

- * Conditions resulting from tampering, misuse, improper adjustment (unless they were made by the dealer or service center authorized by MAKITA during a warranty repair), alteration, accident, failure to use the recommended fuel and oil, or not performing required maintenance services.
- * The replacement parts used for required maintenance services.
- * Consequential damages such as loss of time, inconvenience, loss of use of the engine or equipment, etc.
- * Diagnosis and inspection charges that do not result in warranty-eligible service being performed.
- * Any non-authorized replacement part, or malfunction of authorized parts due to use of non-authorized parts.

OWNER'S WARRANTY RESPONSIBILITIES

As the engine owner, you are responsible for the performance of the required maintenance listed in your owner's manual, MAKITA recommends that you retain all receipts covering maintenance on your engine, but Makita can not deny warranty solely for the lack of receipts or for your failure to ensure the performance of all scheduled maintenance.

As the engine owner, you should however be aware that the MAKITA may deny your warranty coverage if your engine or a part has failed due to abuse, neglect, improper maintenance or unapproved modifications.

you are responsible for presenting your engine to the nearest Makita Factory Service Center or service center authorized by MAKITA when a problem exists.

If you have any questions regarding your warranty rights and responsibilities, you should contact the Makita Warranty Service Department at 1-800-4-MAKITA for the information.

THINGS YOU SHOULD KNOW ABOUT THE EMISSION CONTROL SYSTEM WARRANTY

MAINTENANCE AND REPAIRS

You are responsible for the proper use and maintenance of the engine. You should keep all receipts and maintenance records covering the performance of regular maintenance in the event questions arise. These receipts and maintenance records should be transferred to each subsequent owner of the engine. MAKITA reserves the rights to deny warranty coverage if the engine has not been properly maintained. Warranty claims will not be denied, however, solely because of the lack of required maintenance or failure to keep maintenance records.

MAINTENANCE, REPLACEMENT OR REPAIR OF EMISSION CONTROL DEVICES AND SYSTEMS MAY BE PERFORMED BY ANY REPAIR ESTABLISHMENT OR INDIVIDUAL; HOWEVER, WARRANTY REPAIRS MUST BE PERFORMED BY MAKITA FACTORY SERVICE CENTER OR SERVICE CENTER AUTHORIZED BY MAKITA. THE USE OF PARTS THAT ARE NOT EQUIVALENT IN PERFORMANCE AND DURABILITY TO AUTHORIZED PARTS MAY IMPAIR THE EFFECTIVENESS OF THE EMISSION CONTROL SYSTEM AND MAY HAVE A BEARING ON THE OUTCOME OF WARRANTY CLAIM.

If other than the parts authorized by MAKITA are used for maintenance replacements or for the repair of components affecting emission control, you should assure yourself that such parts are warranted by their manufacturer to be equivalent to the parts authorized by MAKITA in their performance and durability.

HOW TO MAKE A CLAIM

All repairs qualifying under this limited warranty must be performed by Makita Factory Service Center or service center authorized by MAKITA. In the event that any emission-related part is found to be defective during the warranty period, you shall notify Makita Warranty Service Department at 1-800-4-MAKITA and you will be given the appropriate warranty service facilities where the warranty repair can be performed.



WARNING: The Engine Exhaust from this product contains chemicals known to the state of California to cause cancer, birth defects or other reproductive harm.

Makita Corporation

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